the patient had been for some time able to exercise the slightest control, were instantly called into forcible action by the first contact of the edge of the paper. The foot was thrown upwards, chiefly by the extensors of the leg. The paper was kicked and its contents scattered.

The potency of mechanical irritation is of much less interest than the direction of the motion. On this subject I made repeated experiments on two opposite portions of the surface of the foot, which always resulted in producing a motion towards the irritated part, a motion chiefly due to the extensors and flexors of the leg situated on the thigh, and of course at a great distance from the part directly irritated. Although the patient was incapable of moving the foot by a voluntary effort, it was invariably and involuntarily thrown upward by mechanical irritation applied to the vesicated surface on the upper side, and as invariably drawn downwards and backwards by titillation of the sole or plantar region. Thus, irritation of the surface opposite one of the extensors of the toes, the extensor brevis digitorum pedis, called into action the extensors of the leg, whilst irritation of the surface opposite one of the flexors of the toes, the flexor brevis digitorum pedis, called into action the flexors of the leg.

New York, *August 12th*, 1842.

Art. IX.—*Remarks on the propriety and best manner of breaking and extracting large Calculi in the lateral operation.*—By Josiah C. Nott, M. D., of Mobile.

My object is to prove:

1st, That where the calculus is large, and requires a force in extraction which would bruise and lacerate the soft parts severely, it is safer to crush and extract it piecemeal, provided this can be done without injury to the bladder.

2d, To recommend, as meeting these indications, an instrument of larger size, but made after the model of Heurteloup's lithotrity instrument, *brise coque* (stone breaker).

Most surgeons are familiar with the construction and manner of using Heurteloup's *brise coque*, and a detailed description is not necessary. It is composed of two slender pieces about a foot long; one of them slides up or down in a groove cut into the other; when introduced into the bladder, its extremity which is curved, is made to open and grasp the stone like the bill of a duck; the crushing force is then applied at the other end by the screw or *vis de pression* of Leroy d'Etiole; the force which can be applied in this way (as Mr. Velpeau says) is almost incalculable. and no calculus, however hard, can resist it. One half hour's practice too, will enable a novice to grasp a stone with more facility, and with less risk to the bladder, with this instrument, than with the common lithotomy forceps.

I have in the last three years met with four calculi which were so large, that I thought it most prudent to break them, and used the *brise coque* (the largest size used in lithotrity) with the most satisfactory results. Three of them recovered without a bad symptom, and the fourth died from pleurisy taken while convalescing from getting wet in a *rain;* none of them had any inflammatory symptoms of the bladder.

I have recommended above an instrument of larger size, because I know that calculi do occur, which would require a stronger instrument than those used in lithotrity. One might be made of double or treble the ordinary size, and still its construction is such that the size would be no inconvenience when introduced *through the wound* in the lateral operation. I have not yet had one made, because I have no maker at hand.

Case I.—John Knight, ætat. 24, engineer of a steamboat, had symptoms of stone from childhood; his whole life had been one of suffering; looked like a man of 40; general health very bad, pulse very irritable, and in short all the circumstances made the case an extremely unpromising one. After two weeks preparation, on 7th of February, 1839, in presence of several medical friends, and with the assistance of Dr. R. Lee Fearn, I performed the lateral operation as described by Sir A. Cooper; the gorget was used. After the bladder was laid open, I found a stone as large as a small orange, and the *bladder contracted firmly upon it.* The *exterior* of the stone was soft, crumbled when attempts were made to grasp it, and it slipped from the forceps. These difficulties combined to foil all efforts at extraction, and a good deal of time was lost, to no purpose.

At length the *brise coque* of Heurteloup occurred to me. I introduced it through the wound, seized the stone, and with the assistance of the *vis de pression*, crushed it instantly; the fragments were extracted, the bladder washed out, and the patient put to bed without any dressing. The operation was necessarily tedious, but no bad symptom whatever occurred; for the first two days, a gum catheter was passed into the bladder night and morning, while the patient was sitting on a *pot de chambre*, and several syringes of warm water injected through the catheter, and made to pass freely through the wound so as to wash out any small fragments which might be remaining in the bladder; (this I think an important direction in similar cases). The patient was walking over town in twenty days perfectly well. He has, since the operation, gained fifty pounds, and is now pursuing his old occupation on the mail boat between this and Blakely.

Case II.—About two months after the above case, I assisted my friend Dr. H. S. Levert in a case very similar in every respect. The patient was a negro man of about 20 years of age, from the interior of this state; when the bladder was opened, a stone was found about as large as a middle-sized lemon; and the bladder firmly contracted upon it; *this contraction, as in the other case, remained during the whole operation.* The same difficulty in extracting the stone also occurred. I suggested the use of the *brise coque,* which soon overcame the difficulty. No bad symptom occurred, and the patient did well.

The details of the other cases are unimportant, and are therefore withheld.

In the two detailed above, the large size of the calculi; the irritable state of the bladder; its extraordinary and continued contraction; the constitutional derangement, (in the first case particularly,) &c., I think rendered it impossible to extract safely, without crushing; and the large, clumsy instruments commonly recommended by surgeons for this purpose, could not have been employed, without serious danger to the bladder.

Sir Astley Cooper says: "*A number of calculi render the operation more tedious, but not so dangerous as one large stone. It is not the number of times that the forceps are introduced, but the violence used with them which endangers the patient;*" and this opinion is one generally received by the profession.

Sir A. Cooper, Dupuytren, Boyer, Lisfranc, Liston, Physick, Gibson, Dudley, Mott, and other leading authorities agree that the danger of this operation increases with the size of the stone.

Most of these authorities advocate the enlargement of the wound by incision, where there is difficulty in extraction. Others, and particularly Professor Dudley of Kentucky, advise us to avoid cutting as much as possible, and to depend upon gradual and forcible dilatation and *laceration.*

The dangers of too much cutting, are hemorrhage, infiltration, &c. The dangers from contusion and laceration are inflammation, sloughing, infiltration, &c. &c.

If then there be more danger from one large than many small stones; if there be danger from enlarging the wound, either by the knife or by laceration; why, it may be asked, is not crushing the stone more frequently resorted to? The only valid answer I can see to this question is, that the instruments which are usually recommended for this purpose are so massive, illy-contrived, and difficult of application as to endanger the bladder, and other soft parts.

The instrument I recommend should enter into every lithotomy case of instruments, for the operator cannot tell how soon he may have use for it; his first case may be one of this kind. In the case of John Knight, what would have been my position had I not fortunately been in possession of the *brise coque* and familiar with its use? I am satisfied my patient would have lost his life.

Imagine a young surgeon with a case to operate on. In order to prepare himself, he looks over his library—say, Astley Cooper, Dorsey, Gibson, Cooper's Surgical Dictionary, Liston, &c. the books in common use; he cuts into the bladder, and finds a large stone—all of his books have spoken of large stones, but none of them have pointed out a way "sure and safe" to overcome the difficulty. He seizes it, and pulls it away by main force, either with or without additional cutting, and the patient dies from the injury done. The instrument I recommend would have enabled him to avoid the difficulty.

Professor Dudley of Kentucky has no superior, perhaps no equal, as a lithotomist, and there is no one who takes more pleasure in measuring out full justice to him than myself. It is stated, in a pamphlet of his friend and colleague Dr. Bush, which I now have before me, that he has lost but four patients out of 153 operated on; and these four died from diseases of other organs.

This extraordinary success could not have been attained, without extraordinary skill in preparing, and in operating on his patients. Yet who can believe, (not Professor Dudley himself,) that his success would have been so great, had his lot been cast in the impure air of London or Paris, instead of the delightful little town of Lexington, which is surrounded by one of the finest countries in the world, abounding in provisions of the best quality, and populated by a robust and hardy people.

It should be remembered that Dupuytren saved, by the bilateral operation in the foul air of the Hotel Dieu, (the largest hospital in Paris,) twenty-six patients in succession; a success perhaps, even more astonishing than that of Professor Dudley, when all the circumstances are considered.

Professor Dudley, as far as I know, has never broken a stone, and this fact may be brought up as an argument against me. I have details of but very few of his cases, and cannot, therefore, criticise them. I will, however, make an extract from the case of Steele, a youth of 17, which I think is strongly in my favour.

Professor Dudley says "after great labour and difficulty, a calculus measuring about eleven inches in circumference, and upwards of three inches in diameter, weighing nine ounces, was extracted. *The violence done the soft parts by the forceps, the lever, and the calculus, caused the whole of the accelerator muscles and the bulbous portion of the urethra to slough and come away*, and the bladder, which was filled by the calculus, except between the entrance of the ureters and the prostate, being much lacerated by the various efforts made to force the legs of the forceps within the cavity for the purpose of seizing the stone, suffered extensive infiltration, followed by inflammation and sloughing of the cellular substance within the cavity of the pelvis," &c. &c.

Now strange as it may appear, this patient under the superior skill of Dr. D. recovered! Would not most patients under such circumstances have died, and in the foul air of a city hospital would not a recovery be a miracle?

Would not any surgeon say that it would be better in such cases to crush the stone, if it can be done with facility?

During six years attendance on the hospitals of New York, Philadelphia, and Paris, I saw a good many operations for stone; and I noticed that a much larger proportion died after the extraction of large than small calculi; in Paris, particularly, whenever I saw a surgeon exerting much force, I expected soon to hear of the patient's death.

It is a fixed rule in surgery, and one which applies with much stronger force in large cities and hospitals, "that all sources of irritation should be avoided as much as possible."

Those of us who practise in the smaller towns are often astonished at our own success; we frequently see limbs saved, which are condemned by all authorities; and patients recover after capital operations, where death would seem almost certain.

Note.—When this paper was put into the editor's hands, he called my attention to a case published in this Journal two years ago, by Dr. Betton, in which an instrument made by Weiss of London, on the plan I propose, (in other words after Heurteloup's brise piére) was used in the lateral operation.

I am glad to hear that other heads are at work on the same subject, as I attach little importance to originality in these matters. He who successfully contributes towards the establishment of a neglected truth, deserves well of the profession. I know that Velpeau in his *Médicine Opératoire* states that all the lithotrity instruments *have been* advised in the lateral operation. If, however, our American and English works on surgery be examined, they will, I am sure, be found very deficient on the management of large calculi. Dr. Betton's case was an unfortunate one, (unavoidably so,) and therefore not calculated to draw attention to this instrument; my cases were successful, and show that the instrument is a useful one.

Art. X.—*Aneurism of the Femoral Artery, showing the importance of applying a ligature below, as well as above the Sac.* By Wm. E. Horner, M.D., Professor of Anatomy in the University of Pennsylvania, Surgeon at the Philadelphia Hospital, &c.

In the number of this Journal for January 1841, I related two cases of Varicose Aneurism, in which the necessity of a ligature above the sac, and of another below it, was proved. I have now to detail a similar exigency in *simple aneurism*, and which will suggest the value of reconsidering the present rules of treating that disease.

Isaac Davis, a coloured man, a carpenter, aged 48, of a constitution apparently worn, though he says that his life has been temperate, regular, and industrious, came into the Blockley Hospital on the 6th July 1838, with a